

CLAIMS

WHAT IS CLAIMED IS:

1. An intraocular implant for implantation in an eyeball comprising:
 - a tube for implanting into the eyeball comprising an inlet end, an outlet end, and a tube passage extending between the inlet end and the outlet end for permitting aqueous humor to flow out of the eyeball; and
 - a flanged disk connected to the tube at the outlet end of the tube for placing on a surface of the eyeball;
 - wherein the tube passage has a cross-sectional area sufficiently small to inhibit the flow of aqueous humor through the tube passage when an intraocular pressure of the eyeball is below a threshold amount.
2. An intraocular implant according to claim 1 wherein the tube passage is cylindrical, and wherein a diameter of the tube passage is substantially smaller than a length of the tube passage.
3. An intraocular implant according to claim 2 wherein the diameter of the tube passage is about 300 micrometers or less.

4. An intraocular implant for implantation in an eyeball comprising:

a tube for implanting into the eyeball comprising an inlet end with a beveled surface at the inlet end, an outlet end, and a tube passage extending between the inlet end and the outlet end for permitting aqueous humor to flow out of the eyeball; and

a flanged disk connected to the tube at the outlet end of the tube for placing on a surface of the eyeball;

wherein the beveled surface at the inlet end of the tube lies in a first plane forming an angle with the longitudinal axis of the tube and the flanged disk lies in a second plane which is angled opposite to the first plane.

5. An intraocular implant for implantation in an eyeball comprising:

a tube for implanting into the eyeball comprising an inlet end, an outlet end, and a tube passage extending between the inlet end and the outlet end for permitting aqueous humor to flow out of the eyeball; and

a flanged disk connected to the tube at the outlet end of the tube for placing on a surface of the eyeball;

wherein the tube has at least one circumferential hole which opens into the tube passage proximate the inlet end of the tube.

6. An intraocular implant for implantation in an eyeball comprising:

a tube for implanting into the eyeball comprising an inlet end, an outlet end, and a tube passage extending between the inlet end and the outlet end for permitting aqueous humor to flow out of the eyeball; and

a flanged disk connected to the tube at the outlet end of the tube for placing on a surface of the eyeball;

wherein the flanged disk comprises a base, an outer rim, and at least one inner upright, and wherein the base and outer rim form a reservoir having a larger cross-sectional area than the tube passage.

7. An intraocular implant according to claim 6 wherein at least one inner upright is curved to form an inner rim proximate an axial outlet opening of the tube and substantially bounding the axial outlet opening of the tube, the flanged disk further comprising at least one passageway in the inner rim for enabling flow of aqueous humor from the axial

outlet opening through the passageway.

8. An intraocular implant according to claim 6 wherein the flanged disk has an elliptical shape.
9. An intraocular implant for implantation in an eyeball comprising:
 - a tube for implanting into the eyeball comprising an inlet end, an outlet end, and a tube passage extending between the inlet end and the outlet end for permitting aqueous humor to flow out of the eyeball; and
 - a flanged disk connected to the tube at the outlet end of the tube for placing on a surface of the eyeball;wherein the implant has at least one retention projection for anchoring the implant in the eyeball, said retention projection being extended outwardly when the implant is implanted in the eyeball.
10. An intraocular implant according to claim 9 wherein at least one retention projection is extended outwardly by an expansion tool when the implant is implanted in the eyeball.
11. An intraocular implant according to claim 9 wherein at least one retention projection is constructed of

a shape memory alloy and is extended outwardly when subjected to the heat of the eyeball when the implant is implanted in the eyeball.

12. A method of regulating an intraocular pressure of an eyeball comprising the steps of:

providing an intraocular implant comprising (a) a tube for implanting into the eyeball, said tube comprising an inlet end, an outlet end, and a tube passage extending between the inlet end and the outlet end for permitting aqueous humor to flow out of the eyeball, said tube passage having a cross-sectional area sufficiently small to inhibit the flow of aqueous humor through the tube passage when an intraocular pressure of the eyeball is below a threshold amount, and (b) a flanged disk connected to the tube at the outlet end of the tube for placing on a surface of the eyeball; and

implanting the intraocular implant in the eyeball including implanting the tube into the eyeball and placing the flanged disk on a surface of the eyeball.

13. A delivery device for implanting an intraocular implant into an eyeball, the delivery device comprising:

a handle; and

a rodlike instrument;

wherein the rodlike instrument comprises a tip for penetrating a tube passage of the implant and a retention mechanism for retaining the implant on the delivery device.

14. A delivery device according to claim 13 wherein the rodlike instrument comprises a probe.
15. A delivery device according to claim 13 wherein the rodlike instrument comprises a needle.
16. A delivery device according to claim 15 wherein the tip of the rodlike instrument for penetrating a tube passage of the implant comprises a plug inserted in a bore of the needle.
17. A delivery device according to claim 13 wherein the retention mechanism comprises an abutment surface for abutting a flanged disk of the implant, wherein the abutment surface has an angle generally corresponding to an angle of the flanged disk.
18. A method of implanting an intraocular implant into an eyeball comprising the steps of:
 - attaching the implant to a delivery device;
 - cutting a slit in a portion of the conjunctiva

of the eyeball which normally lies at a distance away from an intended implantation site;

placing the implant by the delivery device through the slit in the conjunctiva;

directing the implant by the delivery device to the implantation site;

inserting the implant through the sclera at the implantation site;

withdrawing the delivery device; and

allowing the slit in the conjunctiva to be lie at the distance away from the implantation site.

19. A method of implanting an intraocular implant according to claim 18 wherein the distance between the slit in the conjunctiva and the implantation site is about 5 millimeters or more.
20. A method of implanting an intraocular implant according to claim 18 wherein the slit has a length of about 2 millimeters or less.
21. A method of implanting an intraocular implant according to claim 18 wherein, in the step of inserting the implant through the sclera, the sclera is penetrated by a tip of the tube of the implant.
22. A method of implanting an intraocular implant

according to claim 18 wherein, in the step of inserting the implant through the sclera, the sclera is penetrated by a needle tip of the delivery device.

23. A method of implanting an intraocular implant into an eyeball comprising the steps of:

- attaching the implant to a delivery device;
- directing the implant by the delivery device to the implantation site;
- inserting the implant through the sclera at the implantation site such that a beveled surface at an inlet end of the implant faces away from the iris;
- and
- withdrawing the delivery device.

24. A method of implanting an intraocular implant into an eyeball comprising the steps of:

- attaching the implant to a delivery device;
- directing the implant by the delivery device to the implantation site;
- inserting the implant through the sclera at the implantation site such that a marker is visible upon penetration through the sclera; and
- withdrawing the delivery device.

25. A method of implanting an intraocular implant

according to claim 24 wherein the marker comprises a circumferential hole.

26. A method of implanting an intraocular implant into an eyeball comprising the steps of:
- attaching the implant to a delivery device;
 - directing the implant by the delivery device to the implantation site;
 - inserting the implant through the sclera at the implantation site;
 - extending outwardly at least one retention projection for anchoring the implant in the eyeball;
 - and
 - withdrawing the delivery device.

27. A method of implanting an intraocular implant according to claim 26 wherein, in the step of extending outwardly at least one retention projection, at least one retention projection is extended outwardly by an expansion tool when the implant is implanted in the eyeball.

28. A method of implanting an intraocular implant according to claim 26 wherein, in the step of extending outwardly at least one retention projection, at least one retention projection is extended outwardly by the action of a shape memory

alloy from which it is constructed when subjected to the heat of the eyeball when the implant is implanted in the eyeball.

29. A method of implanting an intraocular implant into an eyeball comprising the steps of:

attaching the implant to a delivery device comprising a handle and a rodlike instrument comprising a tip for penetrating a tube passage of the implant and a retention mechanism for retaining the implant on the delivery device;

directing the implant by the delivery device to the implantation site;

inserting the implant through the sclera at the implantation site; and

withdrawing the delivery device.

30. A method of implanting an intraocular implant according to claim 29 wherein the retention mechanism comprises an abutment surface for abutting a flanged disk of the implant, wherein the abutment surface has an angle generally corresponding to an angle of the flanged disk.

31. A method of implanting an intraocular implant according to claim 29 further comprising the step of vibrating the delivery device during the step of

inserting the implant through the sclera at the
implantation site.